



BSI Standards Publication

Fans — Tolerances, methods of conversion and technical data presentation

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National foreword

This British Standard is the UK implementation of ISO 13348:2025. It supersedes BS 848-9:2007, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee MCE/17, Fans.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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ISO 13348

**Fans — Tolerances, methods of
conversion and technical data
presentation**

*Ventilateurs — Tolérances, méthodes de conversion et
présentation des données techniques*

**Third edition
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CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
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Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Symbols and abbreviated terms	10
5 Performance tolerances for purpose-designed fans and series-produced non-certified fans	13
5.1 Information to be provided by the purchaser.....	13
5.1.1 Operational.....	13
5.1.2 Tolerance grade.....	13
5.2 Information to be provided by the fan supplier.....	13
5.2.1 Essential information.....	13
5.2.2 Optional parameters.....	14
5.3 Tolerances.....	14
5.3.1 Tolerance grades.....	14
5.4 Purchasing arrangements.....	16
5.5 Contractual testing.....	16
5.5.1 Tolerance magnitude near optimum efficiency.....	16
5.5.2 Operation at other than optimum efficiency.....	20
5.5.3 Performance acceptance testing.....	21
6 Performance tolerances for series-produced fans in certified ratings programmes	28
6.1 General.....	28
6.2 Fan laws.....	28
6.3 Check-tests.....	28
6.4 Air performance tolerances.....	29
6.4.1 Check-test tolerances.....	29
6.4.2 Airflow Tolerance.....	29
6.4.3 Power tolerance (T_H).....	31
6.4.4 Efficiency tolerance.....	33
6.4.5 Other efficiency metrics.....	33
6.4.6 Application of tolerances.....	33
6.5 Sound Tolerances.....	33
6.5.1 Check-Test tolerances.....	33
6.5.2 Sound tolerances in octave bands.....	33
6.5.3 Sone value tolerance.....	33
6.5.4 A-weighted sound power level.....	33
7 Performance tolerances for Category E fans (free inlet and free outlet without a partition)	34
7.1 General.....	34
7.2 Performance tolerances for Jet fans.....	34
7.3 Performance tolerances for circulating fans.....	35
7.4 Performance tolerances for air curtains.....	35
8 Methods of conversion	36
8.1 Conversion of air performance test data.....	36
8.1.1 General.....	36
8.1.2 Similarity.....	36
8.1.3 Conversion rules and the fan laws.....	36
8.1.4 Conversion rules for series-produced fans.....	37
8.1.5 Conversion rules for extrapolation.....	37

This is a preview of BS ISO 13348:2025. [Click here to purchase the full version from the ANSI store.](#)

8.2	Conversion of sound power test data	51
8.2.1	General	51
8.2.2	Conditions and limits for application of conversion rules to total sound power level	51
8.2.3	Generalized methods for sound power level prediction	51
9	Technical data presentation	58
9.1	General	58
9.2	Essential information	58
9.3	Fan performance chart	58
9.4	Additional information	60
9.4.1	Sound data	60
9.4.2	Electrical data	61
9.4.3	Mechanical data	61
9.4.4	Air performance	61
9.4.5	Same fan used for different installations	61
	Annex A (normative) Documentation	64
	Annex B (normative) Marking	65
	Annex C (informative) System resistance as a function of flowrate	66
	Annex D (informative) Scaling method	69
	Bibliography	76

This is a preview of BS ISO 13348:2025. [Click here to purchase the full version from the ANSI store.](#)

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This document was prepared by Technical Committee ISO/TC 117, *Fans*.

This third edition cancels and replaces the second edition (ISO 13348:2007), which has been technically revised.

The main changes are as follows:

- terms have been revised;
- symbols and units in [Clause 4](#) have been updated;
- [Clauses 6](#) and [7](#) have been revised;
- additional information provided in [Annex D](#).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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This document aims to clarify technical aspects of contracts where fan performance is concerned, and the accuracy and consistency of performance details published in technical catalogues.

In this document, a distinction is drawn between specially designed fans to suit a specific purpose, to meet a contract specification, and series-produced fans where the performance data is contained in a catalogue.

For purpose-designed fans, the methods of calculating performance data under contract conditions, from performance data obtained under test conditions, are described in [Clause 5](#) for both air and sound data. Four tolerance grades are given, each appropriate to a particular type of fan and/or its application. These procedures have been found satisfactory; however, the supplier and user can agree to adopt alternative methods.

For series-produced non-certified fans, the associated technical data will be contained in a catalogue (electronic and/or printed form). In this case, the recommended method of applying tolerances is as described in [Clause 5](#).

For series-produced fans in certified ratings programmes, the associated technical data will be contained in a catalogue (electronic and/or printed form). In this case, the recommended method of applying tolerances is as described in [Clause 6](#) (based on AMCA (Air Movement and Control Association) International, Inc. certified reference program rules^{[16],[17],[18]}).

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Fans — Tolerances, methods of conversion and technical data presentation

1 Scope

This document specifies performance tolerances and the technical data presentation for fans of all types. It does not apply for fans designed solely for low-volume air circulation, such as those used for household or similar purposes (ceiling and table fans, extractor fans, etc.). For jet fans, refer to ISO 13350.

The upper limit of fan work per unit mass is normally 25 kJ/kg, corresponding to an increase of fan pressure of approximately 30 kPa for a mean density in the fan of 1,2 kg/m³. For higher values, agreement is to be reached between the supplier and the user.

This document applies the five installation categories defined in ISO 5801:

- A free inlet, free outlet;
- B free inlet, ducted outlet;
- C ducted inlet, free outlet;
- D ducted inlet, ducted outlet;
- E free inlet and free outlet without a partition.

The performance of a fan can vary considerably with the installation category it is operating within. Therefore, these categories form an important part of the definition of the fan's technical data presentation.

NOTE International acceptance of the five installation categories provides the opportunity to base a contract on the most appropriate fan category for the end user and the system designer. Correspondingly, the likelihood of the fan providing the agreed performance, without compromise or concession, is enhanced.

The efficiency scaling procedures described in [8.1.5](#) apply to centrifugal fans and axial fans within the specific speed ranges shown in [Table 4](#). To date, there is no experimental data to confirm how they apply to mixed flow fans, having specific speeds in between.

Category E fans are treated in [Clause 7](#).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5801:2017, *Fans — Performance testing using standardized airways*

ISO 5802, *Industrial fans — Performance testing in situ*

ISO 13347-1, *Industrial fans — Determination of fan sound power levels under standardized laboratory conditions — Part 1: General overview*

ISO 13349-1, *Fans — Vocabulary and definitions of categories — Part 1: Vocabulary*

ISO 13349-2, *Fans — Vocabulary and definitions of categories — Part 2: Categories*